Deconstructing the concept of renewable energy-based mini-grids for rural electrification in East Africa - DTU Orbit (04/12/2018)

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The goal of providing universal energy access to all by 2030 under the UN-led SE4ALL initiative calls for new and innovative solutions to rural electrification and is fuelling the recent interest in mini-grids. Mini-grid solutions are emerging as a third alternative to rural electrification, coming between the option of large-scale grid extension and pico-scale stand-alone solutions like solar home systems or solar lanterns. International expectations of mini-grids are high, with the International Energy Agency suggesting that they will play a significant role in reaching the goal of universal access.

Based on a detailed review of past, ongoing, and planned mini-grids in East Africa, this study seeks to deconstructs the popular notion of mini-grids for rural electrification in East Africa. The study reveals that so far activities carried out under the heading of mini-grids to a large extent consist of the hybridization of existing utility-owned electricity systems for medium-size towns located far from the grid, which does not necessarily contribute to rural electrification. However, limited but increasing activity is identified regarding the use of mini-grids to bring electricity to rural villages and smaller rural towns. This is of specific interest because it is for this type of mini-grid that the main challenges are to be found with respect to identifying and testing adequate financing, ownership, and business models. Based on the trajectories identified for mini-grids for rural electrification and the challenges identified in the literature, the study concludes by proposing three avenues for further research. For further resources related to this article, please visit the WIREs website.

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